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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/584398

Filing Date: 12/27/2004

Appellant(s): TSUTSUMI ET AL.

Barry E. Bretschneider
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07/23/10 the supplement appeal brief filed 09/01/10 and appealing from the Office action mailed 12/01/09.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 5, 7-9, 15-16, and 18-19 have been finally rejected.

Claim 12 has been withdrawn.

Claim 10 has been cancelled.

Claims 1-4, 6, 11, 13-14, and 17 were finally rejected but are currently allowed.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The previous 103 rejections of claims 1-4, 6, 11, 13-14, and 17 over Dalman in view of Asakura have been withdrawn. The previous 103 rejections of claims 1-4, 6, 11, 13-14, and 17 over Harris in view of Asakura have been withdrawn.

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

US 5670262	Dalman et al.	09-1997
US 3966686	Asakura et al.	06-1976
US 5741585	Harris et al.	04-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 5 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Dalman (US 5670262) listed on IDS.

As to claim 5, a product-by-process claim, Dalman discloses a polyimide film obtained by reacting pyromellitic dianhydride with 5-amino-2-(p-aminophenyl)benzoxazole (Abs., Ex. 1) and cured to polyimide of 51 μ m, falling within the range of thickness of application (1-150 μ m [0089]). Dalman is silent on the process limitation of “wherein the amount of water vaporized at a high temperature during heating at 500 °C for 10 sec of the film immediately after helium purge at 170 °C for 7 min and preliminary drying is not more than 5000 ppm”. However, claim 5 is a product-

by-process claims that are limited by and defined by the product. Determination of patentability is based on the product itself, not on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F. 2d 695, 698,277 USPQ 964,966 (Fed. Cir. 1985). See MPEP § 2113. In this particular case, no structural difference of the polymer backbone can be found between the disclosed and polyimide films.

As to claim 18, Dalman discloses PWB having a layer of polyimide containing benzoxazole moiety (Abs.).

3. Claims 5 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Harris et al. (US 5741585) listed on IDS.

Harris et al. discloses a polyimide film obtained by reacting bisoxazole containing diamine with dianhydride (Ex. 1,3 Com Ex. A) followed by spin coating on silicon wafer and cured to polyimide having a thickness of 2.7-2.9 μ m, falling within the range of thickness of application (1-150 μ m [0089]).

As to claim 5, Harris is silent on the process limitation of “wherein the amount of water vaporized at a high temperature during heating at 500 °C for 10 sec of the film immediately after helium purge at 170 °C for 7 min and preliminary drying is not more than 5000 ppm”. However, claim 5 is a product-by-process claims that are limited by and defined by the product. Claim 5 is rejected again based on the same product-by-process rationale as applied in above ¶2.

As to claim 18, Harris discloses a polyimide film (base substrate) (Ex. 1, 3 Com Ex. A). Harris et al. is silent on “for printed wiring assemblies”. However, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP 2111.02. In this particular case, it appears there is no difference between the base substrate in the reference and the one in claims 18, and the polyimide base substrate of Harris is clearly capable of being used for printed wiring assemblies.

4. Claims 7-9, 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. (US 5741585) listed on IDS.

Harris discloses a polyimide film obtained by reacting bisoxazole containing diamine with dianhydride (Ex. 1, 3, Com Ex. A) followed by spin coating on silicon wafer and cured to polyimide having a thickness of 2.7-2.9 μm , falling within the range of thickness of the application (1-150 μm [0089]).

Harris is silent on the properties of the difference between a surface planar orientation degree of substrate surface and air surface of the claimed polyimide films recited in claim 7 and surface planar orientation recited in claim 8.

The present application discloses the process of controlling said difference and surface planar orientation is accomplished by controlling the solvent residue of green

film, polyamic acid (the precursor of polyimide), between 25-50% ([0088]). The application does not limit film cast method to spin coating ([0048]). The application discloses the substrate can be metal oxide ([0105]).

Harris also discloses controlling the polyimide precursor which contains a solvent residue of 10-35% (16:5-15). Although the application teaches the unexpected result obtained by controlling the solvent residue in polyimide precursor to be more than 25%, Harris et al. discloses a range that sufficiently overlaps. In light of this, it has been found that where claimed ranges overlap ranges disclosed by the prior art, a *prima facie* case of obviousness exists - see MPEP 2144.05.

Harris teaches as method for controlling the solvent residue in polyimide precursor that is similar to the one present invention, which is applied to obtain a surface planar orientation degree of substrate surface and air surface of the claimed polyimide films recited in claim 7 and surface planar orientation recited in claim 8. As a result, one ordinary skill in the art would have expected the composition and process (and the resulting product) disclosed by Harris et al. to feature the same property of orientation and orientation difference as recited in claims 7-8, because Harris et al. obviously satisfy all of the structural, chemical, and process limitations of the instant invention-see MPEP 2112.01.

Consequently, one ordinary skill in the art would have expected the composition and process (and the resulting product) disclosed by Harris et al. to feature the same properties of curling degree and ratio of dielectric constant as recited in claims 9 and

15-16, because the reference obviously satisfies all of the structural, chemical, and process limitations that would result in the claimed properties..

As to claim 19, Harris et al. discloses a polyimide film (base substrate) (Ex. 1, 3 Com Ex. A). Harris et al. is silent on "for printed wiring assemblies". This claim is rejected for the same functional use rationale as applied to claims 18 in above ¶ 3.

(10) Response to Argument

Ground (A)

- The applicant has argued the examiner did not follow the law and carry the initial burden to provide the evidence or cogent technical reasoning to apply the inherency rationale (Pg.3-4-Pg. 5, ¶1). The examiner has withdrawn the inherency rationale for the previous 102 rejections of claims 5 and 18 over Dalman, though the Examiner asserts the initial burden has been fulfilled by providing a reasoning of the polyimide monomer analysis.
- The applicant has argued the limitation of "wherein the amount of water vaporized at a high temperature during heating at 500 °C for 10 sec of the film immediately after helium purge at 170 °C for 7 min and preliminary drying is not more than 5000 ppm" is not a process limitation, but a property (Pg. 5, ¶1). The examiner disagrees. It appears this limitation is a process limitation for producing the claimed polyimide film. The examiner has maintained and clarified the product-by-process rationale for the previous 102 rejections of claims 5 and 18 over Dalman.

- The applicant has argued again the examiner did not follow the law and carry the initial burden to provide the evidence or cogent technical reasoning to apply the inherency rationale and questioned why the Examiner did not reject claim 1 together with claim 7 (Pg.5, ¶4, Pg. 6, ¶1). The examiner has withdrawn the inherency rationale for the 102 rejections of claims 5 and 18 over Dalman. The examiner would notify the applicant claim 1 contains more limitations of claimed planar orientation coefficient and dielectric constant.

- The applicant has argued again the examiner did not follow the law and carry the initial burden to provide the evidence or cogent technical reasoning to apply the inherency rationale (Pg.6, ¶2-Pg. 7, ¶2). The examiner has withdrawn the inherency rationale for the 102 rejections of claims 5 and 18 over Dalman. The examiner has maintained and clarified the product-by-process rationale for the 102 rejections of claims 5 and 19 over Dalman.

Therefore, the previous 102 rejections of claims 5 and 18 over Dalman have been **maintained**.

Ground (B)

- The applicant has traversed the previous 102 rejection of claims 5 and 18 over Harris for the same reason as argued in Ground A (Pg. 7, ¶¶4-5). Again, the examiner has withdrawn the inherency rationale for the 102 rejections of claims 5 and 18 over Harris. The examiner has maintained and clarified the product-by-process rationale for the previous 102 rejections of claims 5 and 18 over Harris. Also see response to Argument in Ground A.

Therefore, the previous 102 rejections of claims 5 and 18 over Harris have been **maintained**.

Ground (C)

The applicant has argued the examiner has failed to contend the allegedly inherent features and provide a reasoned technical explanation (Pg. 8, ¶¶3-Pg. 9, ¶¶1). The examiner disagrees. The examiner has provided reasoning to support the use of inherency rationale by comparing the similar process of Harris and the present invention, which is to obtain the claimed surface planar orientation degree of substrate surface and air surface of the claimed polyimide films recited in claim 7 and surface planar orientation recited in claim 8 by controlling the solvent residue of green film of polyamic acid precursor. Harris et al. discloses a solvent residue range of 10-35% that sufficiently overlaps with the range of the present invention of more than 25%. The examiner has applied and maintained the overlapping rationale. Consequently, the

inherency rationale has been applied and maintained to meet the claimed properties of claims 7-9, 15-16 and 19.

Therefore, the previous 103 rejections of claims 7-9, 15-16 and 19 over Harris have been **maintained**.

Ground (D)

- Applicant's argument for traversing the previous 103 rejections of claims 1-4, 6, 11, 13-14, and 17 over Dalman or Harris in view of Asakura has been fully considered and persuasive.

Therefore, the previous 103 rejections of claims 1-4, 6, 11, 13-14, and 17 have been **withdrawn**.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/SHANE FANG/

Examiner, Art Unit 1766

/RANDY GULAKOWSKI/

Supervisory Patent Examiner, Art Unit 1766

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